Geometry honors problem sets

Ratios of area and volume

1. Two similar cylinders have radii 3 and 4. Find the ratios of the following:

a) heights b) base circumferences c) lateral areas d) volumes

2. Two similar pyramids have heights 12 and 18. Find the ratios of the following:

a) base areas b) lateral areas c) total areas d) volumes

3. Assume that the Earth and the moon are smooth spheres with diameters 12800 km and 3200 km,

respectively. Find the ratios of the following:

a) lengths of their equators b) areas c) volumes

4. Two similar cylinders have lateral areas  and . Find the ratios of:

a) the heights b) the total areas c) the volumes

5. Two similar cones have volumes  and . Find the ratios of:

a) the radii b) the slant heights c) the lateral areas

6. Two similar pyramids have volumes 3 and 375. Find the ratios of:

a) the heights b) the base areas c) the total areas

7. The scale for a certain model freight train is 1:48. If the model hopper car (usually used for carrying

coal) will hold 90 in³ of coal, what is the capacity in cubic feet of the actual hopper car?

8. Two similar cones have radii of 4 cm and 6 cm. The total area of the smaller cone is  cm². Find

the total area of the larger cone.

9. A diagonal of one cube is 2 cm. A diagonal of another cube is  cm. The larger cube has volume

64 cm³. Find the volume of the smaller cube.

10. A snow man is made using three balls of snow with diameters 30 cm, 40 cm, and 50 cm. If the head

weighs about 6 kg, find the total weight of the snowman.

11. A certain kind of string is sold in a ball 6 cm in diameter and in a ball 12 cm in diameter. The smaller

ball costs $1.00 and the larger one costs $6.50. Which is the better buy?

12. Two similar pyramids have lateral areas 8 ft² and 18 ft². If the volume of the smaller pyramid is 32ft³,

what is the volume of the larger pyramid?

13. Two similar cones have volumes  and . If the lateral area of the smaller cone is , what

is the lateral area of the larger cone?

14. A pyramid with height 15 cm is separated into two pieces by a plane parallel to the base and 6 cm

above it. What are the volumes of these two pieces if the volume of the original pyramid is 250 cm³?